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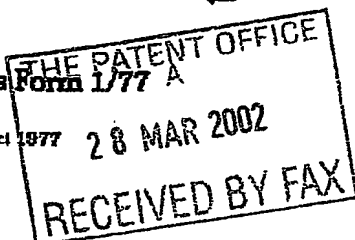
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Incorporated in the United Kingdom,

[ADP No. 08473233001]

Patents

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28MAR02 E707411-1 D10007
P01/7700 0.00-0207357.5

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1. Your reference

P3075 GB PRO

2. Patent application number

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3. Full name, address and postcode of the or of each applicant (underline all surnames)

BENTLEY ADVERTISING & DESIGN LIMITED
The Granary, 50 Barton Road, Worsley,
MANCHESTER M28 2EB

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

SECTION 30 (1977 ACT) APPLICATION FILED 9/9/02
GB 835 441 700 1

4. Title of the invention

CONE-MOUNTABLE BARRIER AND METHOD OF
PROVISION THEREOF

5. Name of your agent (if you have one)

NOVAGRAAF PATENTS LIMITED

"Address for service" in the United Kingdom
to which all correspondence should be sent
(including the postcode)

THE CRESCENT
54 BLOSSOM STREET
YORK YO14 1AP

Patents ADP number (if you know it)

07226488802

8.2991 66003

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

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Date of filing
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7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

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a) any applicant named in part 3 is not an inventor, or
b) there is an inventor who is not named as an applicant, or

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Continuation sheets of this form

Description 10

Claim(s)

Abstract

Drawing(s) 4 only

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11.

I/We request the grant of a patent on the basis of this application.

Signature *Peter Wilson* Date

NOVAGRAAF PATENTS LIMITED

28/03/2002

12. Name and daytime telephone number of person to contact in the United Kingdom

Peter Wilson (Dr)

01904 810588

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**CONE-MOUNTABLE BARRIER AND METHOD OF PROVISION
THEREOF**

The invention relates to a cone mountable barrier, comprising a barrier tape
5 dispenser suitable for mounting on a road traffic cone such as to dispense tape
to serve as a barrier, and in particular a temporary or deployable barrier. The
invention also relates to a method of deploying a barrier, in particular a
temporary barrier, comprising the use of such dispenser devices.

10 Road traffic cones are well established as means by which areas of roadway
can be cordoned off or otherwise delineated on a temporary basis. The need
for such delineation may arise for a variety of established reasons, including
separation and direction of streams of traffic, or preventing vehicular or
pedestrian access to a restricted area, for example during periods of road
15 repair.

Such road traffic cones are easily deployable and conveniently transportable.
Nevertheless, a barrier comprises entirely of cones is not without its
limitations. To be effective, such a barrier is likely to need a large number of
20 cones placed relatively closely together. This increases costs, and is time
consuming to deploy.

Accordingly, to reduce the number of cones required for a given barrier, it is
known to provide barrier systems wherein road traffic cones are spaced more
25 widely and lateral extensions are provided linking therebetween. For example,
cones might be provided with means to mount rigid lateral plastic extensions
with suitable hazard markings therebetween. Such structures are however
cumbersome in transportation and assembly. Moreover, the rigid lateral
pieces in the structures are generally of fixed lengths which offer limited

flexibility when the areas for which a barrier is required are liable to be of variable shape and dimension.

5 It is also known to tie lengths of plastic tape, provided with a suitable hazard pattern, between the cones. Such systems are crude, can be difficult to handle particularly in the wind, and are not practically recyclable and are therefore environmentally limited.

To address some of these objections, UK Patent No. 2152563 describes a
10 plastic strip specifically adapted for engagement with the upright parts of road traffic cones. This specifically adapted tape offers some advantages, but is nevertheless still difficult to store compactly, to transport, and to handle, particularly in windy conditions.

15 It is an object of the present invention to provide a road traffic cone mountable barrier which mitigates some or all of the above disadvantages.

It is a particular object of the present invention to provide a road traffic cone mountable barrier that lends itself to easy storage, convenient transportation to
20 a barrier site, and easy handling even in difficult environmental conditions.

It is a particular object of the present invention to provide a road traffic cone mountable barrier that is adaptable to provide a variable sized barrier between two cones and/or that is adaptable for incorporation into a system comprising a
25 barrier delineating an area of complex and variable shape.

Thus, according to the present invention in a first aspect there is provided a road traffic cone mountable barrier comprising a tape cartridge, hollow to define a tape storage cavity, a spindle rotatably mounted in the tape storage

cavity having tape wound thereon, a deploying aperture in the tape cartridge through which at least a leading edge of tape projects externally, to allow the tape in use to be dispensed therefrom by unwinding from the spindle, a receiving means on the tape cartridge to engagingly receive a leading edge of tape from another like cartridge in use, mounting means associated with a lower part of the cartridge to mount the tape cartridge on or about an apex of a road traffic cone.

Thus, for use, the cartridge is mounted generally above a road traffic cone.

10 Tape is unwound from the spindle within the cartridge and pulled out through the deploying aperture. To complete a barrier, a second tape cartridge is mounted upon a second cone. The leading edge of tape dispensed from the first cartridge is received and engaged upon a receiving means provided on the second cartridge. Large barriers of complex shape can be constructed using multiple cartridges.

The arrangement is compact and easily stored, taking up little space, yet adapts to the provision of a wide variety of sizes and shapes of barrier. The cartridge is stably engaged generally above the cone, and is thereby readily deployable to a variety of lengths. After use, the tape may be withdrawn back and reeled back into the cartridge and rewound onto the spindle for storage and reuse. Thus the tape is compactly stored and is reuseable.

The tape cartridge engages above a road traffic cone by means of the mounting means associated with a lower part thereof. The mounting means are preferably adapted to engage on or about the apex of the road traffic cone in interference fit. For example, the mounting means may comprise a tubular lower portion of suitable shape to co-operably engage with the cone, for example a cylindrical lower portion to engage with a cone of circular cross

section. The tubular lower portion preferably comprises flexibly resilient material and/or is slotted such as to be resiliently deformable as the cartridge is pushed onto the apex of the cone to effect the interference fit.

- 5 Other additional or alternative mounting means will readily suggest themselves. For example, the mounting means may comprise mutually co-operable and slots or the like, providing for sliding and/or rotational engagement, or may comprise screw fixings, or may comprise mutually co-operable aperture and rod fixings, such as bolt arrangements. Any
-
- 10 combination of fittings is suitable for the mounting means. However, it is preferable if the mounting means are adapted for engagement on or around the apex of a road traffic cone of conventional design, so that the device can be fitted to existing cones and does not require especially co-operably manufactured cone designs.

15

- It will be understood that references to road traffic cones are references to temporary and portable structures for placement on a road way comprising generally a stable ground engaging platform portion and a generally tapering upright portion, which may or may not be mathematically conical. For
- 20 example, truncated conical, generally pyramidal or truncated pyramidal shapes will be well known.

- The tape is of any flexibly resilient elongate material suitable for winding onto and off the spindle. Optionally, the tape comprises an elongate flexible strip, a
- 25 rope or a cord. Conveniently, the tape comprises an elongate thin flexible strip of material, for example of plastics sheet material or woven or non-woven fabric material. The width of the material is determined by the need for flexibility and the given application, but is likely to be in the range 2cm to 10cm or thereabouts. The length of the material is determined by likely

5

desired lengths between two cones in a barrier, and by the storage capacity of the cartridge.

5 The tape is preferably comprised of material and/or provided with a surface pattern or surface layer of material incorporating suitable hazard warning markings or information, for example in alphanumeric form, in the form of brightly coloured stripes, chevrons or the like. Preferably, the tape comprises or incorporates a reflective surfaced material so as to be readily illuminated by reflection (e.g. in car headlights) for safety at night.

10

The tape may also be fabricated from material and/or surface treated for weather resistance etc.

15 To obviate problems which might be associated with strong winds, the tape can be perforated/reticulated, especially where the tape is relatively wide.

20 The tape cartridge sits upon and above the apex of the cone, and accordingly the tape barrier strip sits at a higher level than that in GB 2152563. This can improve visibility, and enhance the functionality and safety of the barrier. In a preferred embodiment, to increase this still further, the cartridge incorporates a means for height adjustment, whereby the height at which a tape dispensing portion of the cartridge seats in use can be varied. The means for height adjustment may comprise mutually telescoping or folding cartridge portions and/or detachable extending portions to raise the height of the dispensing part
25 of the cartridge away from the mounting means in engagement with a cone in use.

The cartridge is conveniently generally cylindrical for engagement above a cone of circular cross section.

The spindle is rotatably mounted, especially such as to seat generally above a vertical axis of a cone in use to give enhanced stability. One end of the tape is fixedly mounted to the spindle, and the tape is wound thereon such that
5 another free end of the tape is able to protrude through the deploying aperture for dispensing.

Means are provided to facilitate restowage of the tape after use from a dispense configuration to a stored configuration wound upon the spindle. At
10 its simplest, means might merely be provided to allow the spindle to be rotated in a suitable direction to rewind the tape. Conveniently however, the spindle comprises means for biasing tape wound thereon to a stowed position. In particular, for example, the means for biasing the tape to a stowed position comprises spring biasing means acting on the spindle to tend to urge the
15 spindle to rotate in a direction which would tend to rewind the tape. This has three advantages in particular. First, it simplifies the rewinding process after use. Second, it maintains the dispensed tape in tension so that the material of the tape need not have significant rigidity to comprise an effective generally horizontal barrier between two cones. Third, it tends to draw tape back into
20 tension when it has been stretched in use, for example by the wind.

Releasable locking means may be provided to lock the spindle into position when the tape is dispensed a predetermined desired amount. Additionally or alternatively an inertia reel lock may be provided in association with the
25 spindle which when deployed allows some limited play in the tape, but prevents excessive sudden further deployment.

The tape leading edge is preferably provided with a stopper, suitably sized and shaped to engage against the deploying aperture as the tape is withdrawn to

prevent the leading edge from being drawn entirely back into the cavity and facilitate future dispensing.

5 The tape leading edge preferably has a connecting portion to be engagingly received in the receiving means of a cartridge of another like device in use to form a barrier portion. Preferably, the connecting portion is a rigid projecting portion, and the receiving means comprises an apertured receiving means.

10 Conveniently, the connecting portion and the stopper may be provided by the same component. For example, the leading edge of the tape may comprise a rigid end rod suitably sized to be unable to fit through the dispensing aperture, and suitably shaped to engage with a co-operating apertured portion comprising the receiving portion of a cartridge.

15 Preferably, a plurality of receiving means are provided disposed radially at several angles around the cartridge. This allows construction of adjacent barrier sections at a plurality of different angles, and allows construction of complete barriers of complex shape.

20 Conveniently, the deploying aperture incorporates means to clean the surface(s) of the tape as it is wound/rewound onto the spindle after use. For example, close fitting brushes may be provided which bear upon a surface or surfaces of the tape as it is withdrawn, to brush off accumulated dirt or the like so that this is not drawn into the cartridge when the tape is stowed.

25

According to the present invention in a second aspect there is provided a cone to serve as a road barrier comprising a tape dispenser as hereinbefore described engaged upon and/or about an apex thereof.

According to the invention in a third aspect there is provided a barrier comprising a plurality of cones on at least some of which are mounted cone mountable barrier cartridges as hereinbefore described, with tape deployed therefrom and extending between at least some of the said dispenser
5 cartridges.

According to the present invention in a fourth aspect there is provided a method of forming a barrier, and in particular a temporary deployable barrier, which comprises the steps of: providing a plurality of cones; mounting tape
10 cartridges as hereinbefore described on or about an apex of at least some of the said cones; dispensing tape from at least one such tape cartridge; engaging the leading edge of the dispensed tape from the at least one said cartridge to a receiving means on another such cartridge.

- 15 The invention will now be described by way of invention only with reference to Figures 1 to 4 of the accompanying drawings, wherein
Figure 1 is partially cut away view of a cartridge in accordance with the invention with the tape undeployed;
Figure 2 is a view of the cartridge of Figure 1 in intact formation;
20 Figure 3 is an illustration of the connection of the tape from the cartridge of Figure 1 with another like cartridge;
Figure 4 is an illustration of a barrier formed by the cartridges of the embodiment of the invention.
- 25 Referring first to Figure 1, a cartridge (1) is shown consisting of a moulding of suitable high impact plastics material such as <insert>. The cartridge (1) is of generally cylindrical cross section, defining a tape storage cavity (3).

Within the tape storage cavity (3) is mounted a vertical cylindrical spindle (5), which is mounted for rotation relative to the cartridge (1) about an axis generally coaxial with the cylinder comprising the cartridge (1).

- 5 Shown in an undispensed configuration wound around the spindle (5) is a length of tape (7) comprising PVC with a reflective surface and a suitable alarm marking material consisting of alternate red and white chevrons (9a, 9b). A distal end of the tape is provided with a rigid plastic rod like portion (11) which, as will be seen from later drawings, serves both to prevent the tape
10 being drawn wholly back into the cartridge and to effect connection of the tape when deployed with another like cartridge.

The tape dispenser is biased to the stowed configuration by means of a spring biasing means (not shown) acting on the spindle (5) and tending to urge it in a
15 clockwise direction when viewed from above in this instance, such as to tend to urge the tape to be rewound.

A lower hollow cylindrical portion (8) allows the cartridge to be retained on a cone in use. The cartridge is pushed onto the apex of a cone and retained by
20 an interference fit.

In Figure 2, a cartridge (1) is shown without any tape present for illustrative purposes. In use, the tape will protrude through the deployment aperture (13). The deployment aperture (13) is provided with a pair of close fitting brushes
25 (15) of *<insert material>* which in use will bear upon a portion of tape as it passes out, and more particular back in, through the brushes, and serve to remove accumulated dirt and debris from its surfaces so that the accumulated dirt and debris is not brought back into the cavity within the cartridge.

10

Figure 2 also illustrates a receiving connecting portion (17) whose operation will be seen in relation to Figures 3 and 4. In the present embodiment, receiving portions (17) are provided at right angles radially in three positions on the cartridge (1), with the fourth position at right angle radially comprising the dispensing aperture. This gives a good degree of flexibility in constructing a variety of barrier structures. In other instances, alternative arrangements of receiving connectors (17) will give alternative functionality.

Figure 3 illustrates the connecting action. The rod (11) at the leading end of the dispensed tape (7) dispensed from a first dispenser cartridge (not shown) is adapted to slidably engage with the receiving projection (17) of the second dispenser cartridge (21) in Figure 3. Thus, the tape is caused to extend between the two cartridges and form a barrier. It can be noted that the rod (11) is configured to be wider than the deploying aperture (13) in its respective cartridge, and accordingly, it also serves to prevent the end of the tape from being entirely drawn back within the cartridge when the tape is withdrawn after use.

In Figure 4, a plurality of devices in accordance with this embodiment of the invention are shown engaged upon a series of road cones (25) to form a barrier. It can be seen that in accordance with the invention intermediate cones may be dispensed with, making the barrier easier and cheaper to deploy. The tape provides an excellent barrier material, suitable for delineating the area around which the barrier is placed with enhanced safety,

25

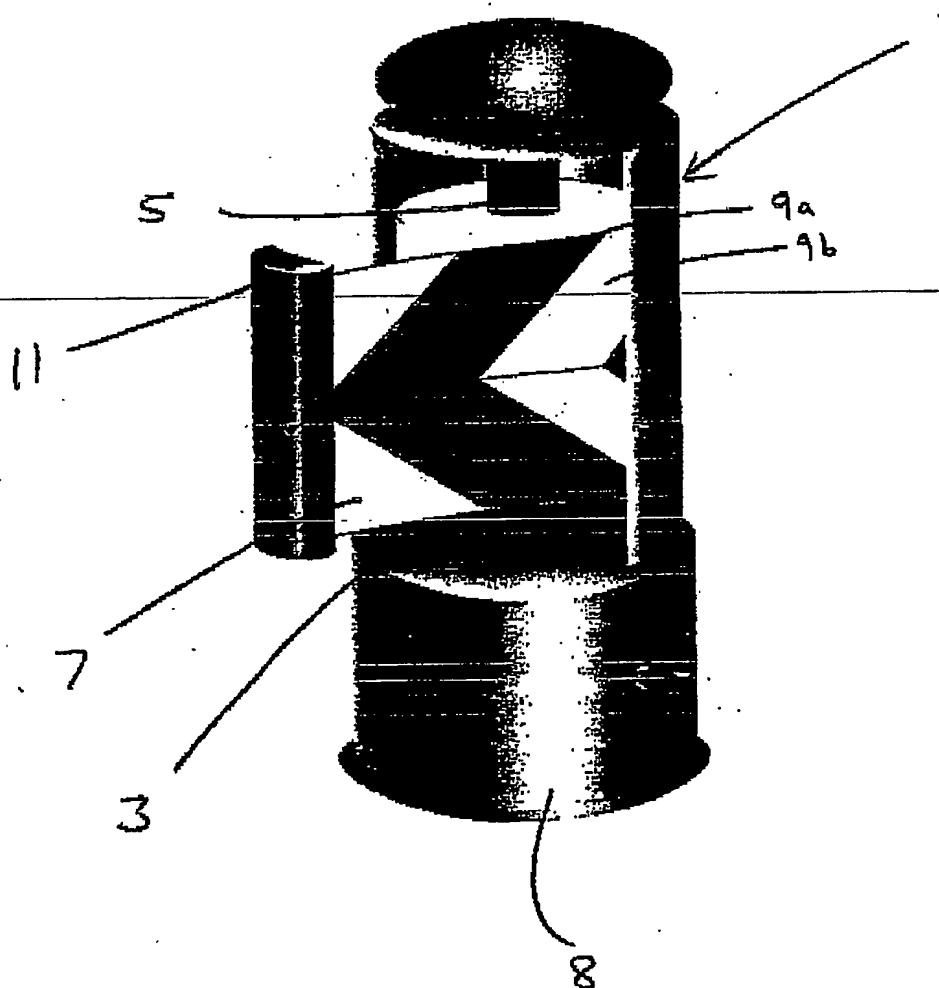


Figure 1

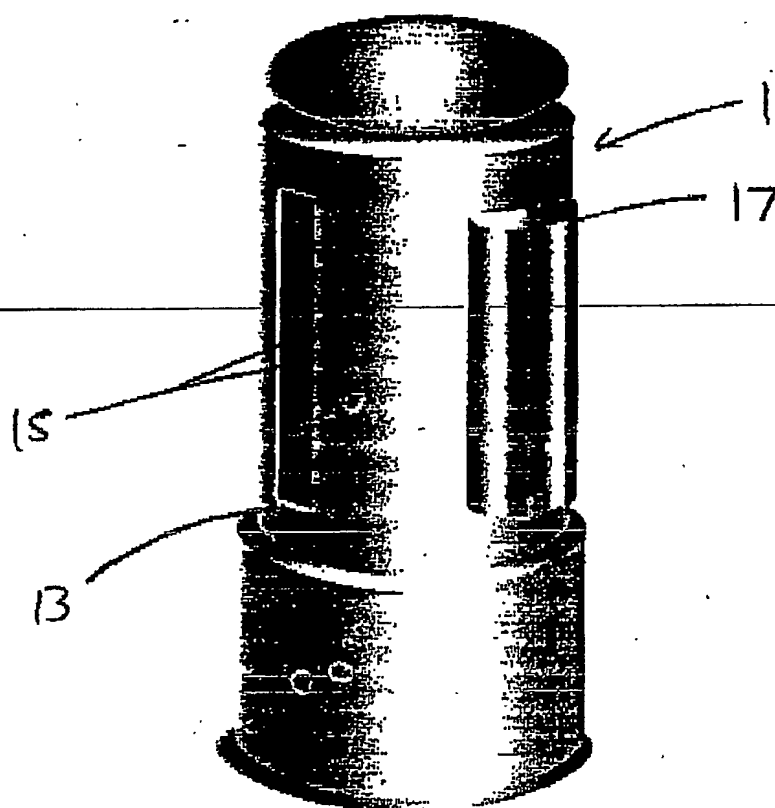


Figure 2

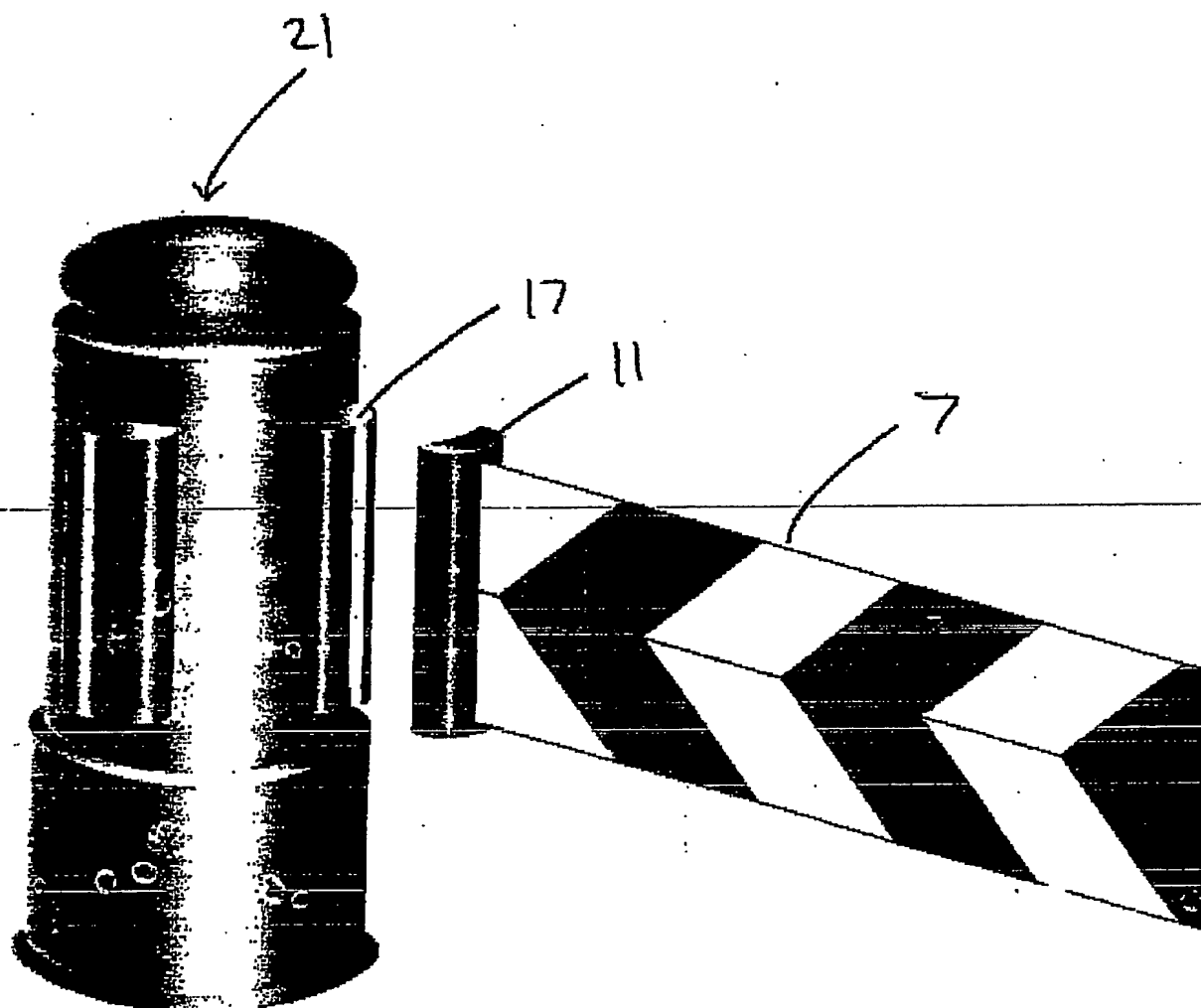


Figure 3

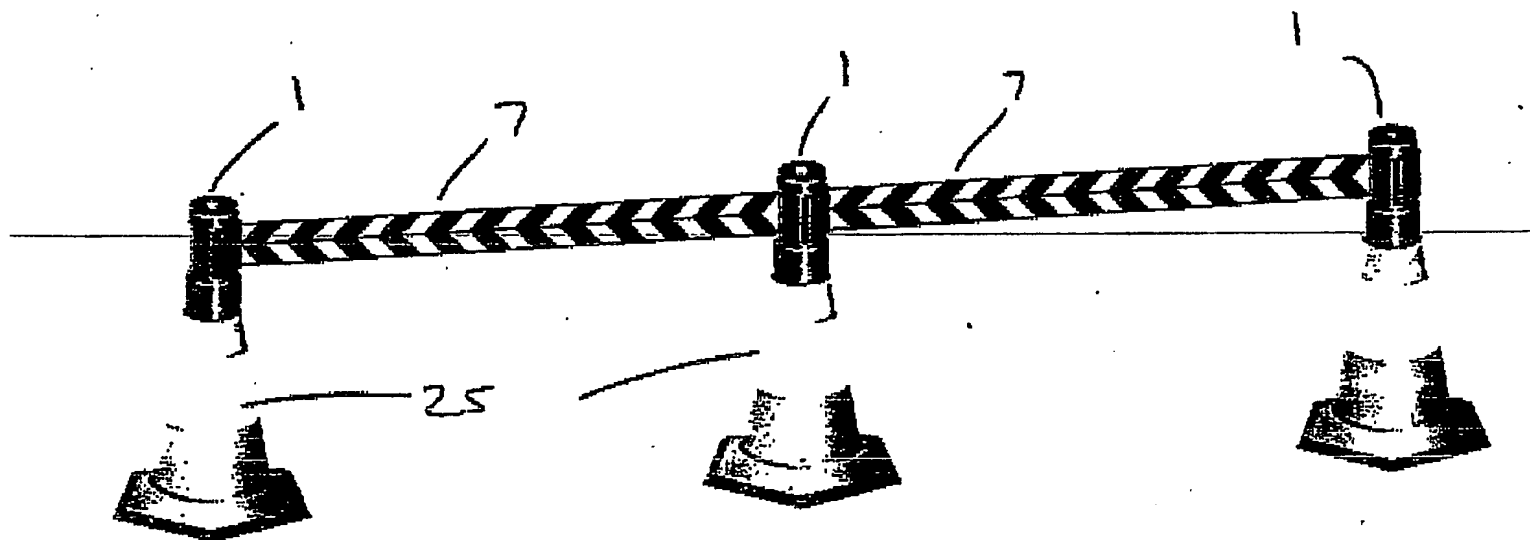


Figure 4

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